



ANSI C18.5M, Part 1-2020

American National
Standard for Portable
Lithium Rechargeable
Cells and Batteries—
General and
Specifications



National Electrical Manufacturers Association
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*American National Standard
for Portable Lithium Rechargeable Cells and Batteries—
General and Specifications*

Secretariat:

**National Electrical Manufacturers Association
1300 N 17th St., Suite 900
Rosslyn, VA 22209**

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American National Standards Institute, Inc.

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Foreword

In 1912, a committee of the American Electrochemical Society recommended Standard methods to be used in testing dry cells. Their recommendations were followed five years later when the National Bureau of Standards prepared specifications that included cell sizes, arrangement of cells within batteries, service tests, and required performance.

The need for continued revision to the specification led to the authorization by the American Engineering Standards committee of a permanent sectional committee on dry cells, now portable cells. This Committee, C18, representing battery users, manufacturers, and government agencies, has remained active since that time.

This Standard is a revision of ANSI C18.2M, Part 1-2007 *American National Standard for Portable Rechargeable Cells and Batteries—General and Specifications*. This current revision seeks to separate out the rechargeable lithium cells and batteries and improve upon performance and other requirements that are unique to rechargeable lithium with harmonization to the IEC 61960 Standards for rechargeable lithium where applicable. Harmonization with the other ANSI C18 Standards was implemented where applicable.

The basic philosophical approach used in developing this Standard was that of setting forth uniform test procedures that permit manufacturers' self-declaration with regard to the performance levels of their products, or, in some cases, establishing minimum acceptable performance levels.

In April 1996, the then ANSI Accredited Standards Committee C18 on Specifications for Dry Cells and Batteries established a new general format for the publication of its Standards, dividing this Standard into two parts. Part 1 of this American National Standard for Portable Rechargeable Cells and Batteries contains two basic sections. The first section has general requirements and information, such as the scope, applicable definitions, general descriptions of battery dimensions, terminal requirements, marking requirements, general design conditions, test requirements, etc. Section 2 of Part 1 is comprised of specification sheets for various types of cells and batteries. Part 2 of the Standard, a separate document, contains safety requirements.

Suggestions for the improvement of this Standard will be welcome. They should be sent to:

**National Electrical Manufacturers Association
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Attention: Secretary ANSI ASC C18**

This Standard was processed and approved for submittal to ANSI by the American National Standards Committee C18 on Portable Cells and Batteries. Committee approval of this Standard does not necessarily imply that all committee Members voted for its approval. When Committee C18 approved this Standard, it had the following Members:

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Khaled Masri, Secretary

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1 General

Note: Part 1 does not include safety requirements, which can be found in Part 2.

1.1 Scope and Objectives

1.1.1 Scope

This publication applies to portable rechargeable, or secondary, lithium cells and batteries¹.

This document covers secondary lithium cells and batteries with a range of chemistries. Each electrochemical couple has a characteristic voltage range over which it releases its electrical capacity, a characteristic nominal voltage, and a characteristic final voltage during discharge. See Table 1 for further details of the electrochemical systems included in the scope of this Standard.

This document defines a minimum required level of performance and a Standardized methodology by which testing is performed, and the results of this testing reported to the user.

Users will be able to establish the viability of commercially available cells and batteries via the declared specification and thus be able to select the cell or battery best suited for their intended application.

Part 2 of this Standard describes all safety tests and requirements.

1.1.2 Purpose

The purpose of this publication is:

- a. To ensure the electrical and physical interchangeability of products from different manufacturers;
- b. To minimize the proliferation of cell and battery types;
- c. To define Standard performance tests and provide guidance for their assessment; and,
- d. To provide guidance to consumers, manufacturers, designers, and other end users.

This is achieved by specifying designations, dimensions, polarity, terminals, markings, test conditions, and procedures.

1.2 Normative References

The following Standards contain provisions that, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the edition indicated was valid. All Standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent edition of the Standard indicated below.

ANSI C18.5M, Part 2 *Portable Rechargeable Lithium Cells, and Batteries—Safety Standard*

IEC 61000-4-2 Electromagnetic compatibility (EMC)—Part 4-2: Testing and measurement techniques—Electrostatic discharge immunity test

¹ Unless otherwise noted, the word “battery” is used to refer to either cell or battery or both in the remainder of this document.